WT 05-336

LEVENTHAL SENTER & LERMAN PLLC

November 14, 2005

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Federal Communications Commission
Office of Secretary

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: Request for Waiver of 47 C.F.R. § 17.47

Dear Ms. Dortch:

On behalf of American Tower Corporation ("ATC"), I am hereby submitting an original and four copies of ATC's response to a request for additional information made by a letter dated September 29, 2005 of Jeffrey S. Steinberg in the above-referenced matter.

Please date-stamp the enclosed "Return Copy" of this response and return it to the courier delivering this package. Please direct any questions regarding this request to the undersigned.

Very truly yours,

Dennis P. Corbett

Dennis P. Corbett
Counsel to American Tower Corporation

Attachments

cc: (by hand and e-mail; w/encl.): Mr. Jeffrey S. Steinberg
Mr. George Dillon
Mr. James D. Schlichting

2000 K STREET, NW, SUITE 600, WASHINGTON, DC 20006-1809
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November 14, 2005

Mr. Jeffrey S. Steinberg
Deputy Chief
Spectrum and Competition Policy Division
Wireless Telecommunications Bureau
445 Twelfth Street, SW
Washington, DC 20554

Re: **American Tower Corporation**
Request for Waiver of 47 C.F.R. § 17.47

Dear Mr. Steinberg:

American Tower Corporation ("ATC"), by its attorneys, hereby responds to your request for additional information made by letter dated September 29, 2005 in the above-referenced matter. Your letter arose from a Request for Waiver filed by ATC on May 19, 2005 seeking a waiver of Section 17.47 of the Commission's rules for all ATC towers that use the Eagle Monitoring System ("Eagle System") developed by Dielectric / Flash Technology ("Flash"). By email dated October 26, 2005, you granted ATC an extension to November 14, 2005, to submit this response.

The request letter poses seven inquiries. ATC's responses are set forth below.

Inquiry 1: *List the fault detection functions of the Eagle System and their respective anomalies or end effects (e.g., controller outage, light failures, landline outage, etc.). Provide these results in a summary table and indicate what level (major, minor, etc.) alarm the function generates.*

Major Alarms

Fault Detection Function	Anomalies / End Effects
Beacon/Strobe Failure (Indicates a malfunction of the tower lamp.)	Lamp is not functioning or is burned out.
Beacon/Strobe Communication Failure (Indicates a malfunction of the tower lamp and of the communications connection between the tower and Flash's Alarm Response Center ("ARC") located in Tennessee. The ARC was formerly referred to as the National Operations Center ("NOC").)	Lamp is possibly not functioning or is possibly burned out and the communication line between the tower and the ARC is not operating. The ARC is unable to determine whether the tower lighting system is functioning.

Filter Failure (Indicates the mechanism which covers a tower lamp with a red filter for nighttime operation is not functioning.)	Single strobe actuator system filter either did not properly place the red night filter over the white lamp for nighttime operation or remove it for daytime operation. As a result, the tower light is not illuminated in the proper color during the relevant daypart of its operation.
Low Flash Energy (Indicates the measured power to the lamp does not meet the FAA's candelas intensity requirement.)	Light controller capacitors are not functioning correctly to produce the correct power burst to the lamp. As a result, the tower light is not flashing at the proper intensity level.
Consecutive Missed Flashes (Indicates that the tower lamp's flashes-per-minute rate does not meet FAA's requirements.)	A strobe beacon is not flashing at the rate required by the FAA.
Photo Cell Failure (Indicates the system has failed to change the light intensity from day, twilight and night modes.)	Tower lighting will not properly switch between various operational modes.
Power Failure (Indicates total power failure at the site.)	Tower is not lit and backup DC power to the controller has failed.
Site Communication Failure (Indicates a malfunction with the communications system between the tower and the ARC.)	ARC is not able to monitor operation of the tower's Eagle System and is unable to determine whether the tower lighting system is functioning.

Minor Alarms

Fault Detection Function	Anomalies / End Effects
AC Power Failure (Indicates an AC power outage at the tower site.)	On-site back-up DC power system (generator or battery racks) is activated, site may or may not be lit.
DC Power Failure (Indicates DC power outage at the tower site.)	DC back-up power batteries to the controller are low or out of power.
Side Marker Failure (Indicates a malfunction of a mid-level lamp.)	Steady burning side marker lamp is not functioning or burned out.

Inquiry 2: *From the time the Eagle System became fully stabilized through the current date, provide a table listing specific incidents of major alarms and indicate the type of outage and the general cause. Indicate actions taken to remedy such occurrences and the number of towers involved. A major alarm indicates a fault that may lead to light or other major tower element outage. Treat the outages related to Hurricanes Katrina and Rita separately. Note that we are not requesting complete alarm data records, but only those of most significance.*

NOTE: Pursuant to a telephone call on November 3, 2005 between Dennis P. Corbett, attorney for ATC, and John Borkowski of the FCC's Spectrum and Competition Policy Division, the scope of this Inquiry 2 has been narrowed to request ATC to provide data only with respect to alarms pertinent to possible Eagle System failures, not all lighting or other major tower element outages.

The Eagle System monitoring platform became fully stabilized on March 28, 2002. Since that time, the Eagle System has reliably identified all NOTAM-worthy failures. We explain below the mechanisms employed to guard against such failures.

One of the components of the Eagle System that is designed to increase its reliability is a fail-safe mechanism that sounds an alarm in the event the Eagle System itself malfunctions. The Eagle System computer server located in the Tennessee ARC (formerly known as the NOC), which gathers the data from each monitored tower, sends an electronic "heartbeat" to the alarm console monitored by ARC staff every five minutes. If no such "heartbeat" is received by the alarm console in a 12 minute period, the alarm console generates an alarm, thus preventing a breakdown in the communication between the Eagle System server and the alarm console from going unnoticed.

Since June 2003, the Eagle System has experienced a total of 296 server alarms, most of which were server maintenance issues. However, the vast majority of these server alarms do not reflect a server problem, but result from the fact that the Eagle System does not include an override of the electronic "heartbeat" function. When a server is taken off-line (e.g., for routine maintenance) a server alarm is generated every 12 minutes until the server is returned on-line. Flash has had several occasions on which they have had to turn the Eagle System server off and reboot it; however Flash has never had to switch operations to its backup facility in Horsham, PA.

In addition to the Alarm Technicians who monitor the incoming alarms, the Eagle System is supported by three Flash information technology ("IT") staff persons, one of whom is on duty at all times, as well as a 24-hour IT center operated by SPX Corporation ("SPX"), the parent company of Flash.

Since the date of system stabilization, there has not been any incident in which the Eagle System falsely reported a tower alarm, either major or minor, signaling a problem that did not in

fact occur at that tower, i.e., a "false positive." All tower alarms that have been generated by the Eagle System have signaled an actual problem with a tower controller or associated system.

Inquiry 3: *For the same time period as in (2) above, indicate the number and the frequency of Eagle System malfunctions or failures that were and are currently being detected by quarterly inspections. When failures were detected, what was the cause of the failure? Categorize results based on the type of outage.*

As of November 14, 2005, ATC had conducted a total of 59,361 on-site quarterly inspections of towers monitored by the Eagle System since March 28, 2002. (The original waiver request reported that 43,761 on-site quarterly inspections had been conducted on towers monitored by the Eagle System. That number was as of January 1, 2005.) No NOTAM-worthy event has been discovered from any of these quarterly inspections. Indeed, the Eagle System technology provides the functional equivalent of a continuous quarterly inspection of all towers it monitors. As a result, a tower owner is notified of tower problems immediately in many instances, and within twenty-four hours at the most.

Inquiry 4: *Can ATC readily identify which of its towers are equipped by an active Eagle System, and which are not? How are the newly-equipped Eagle System towers tracked?*

ATC can readily identify its 4,694 towers that are currently equipped with an active Eagle System. (The number of ATC towers monitored by the Eagle System has increased since the date on which the original waiver request was filed.) Upon installation of the Eagle System at an ATC tower, the technician on-site at the tower contacts the ARC and joint tests are performed. As part of this installation and joint testing, the tower's FCC Antenna Structure Registration Number, site name, site number, site phone number, equipment list and the relevant notification contact/operations management information for the specific tower is entered into ATC's "Remedy" system, an online system used to track trouble tickets that are opened on tower issues. This information is then copied into the Eagle System database which will monitor the tower and a second ARC technician verifies the information to ensure its accuracy.

Inquiry 5: *Describe any diagnostic functions available to ATC, either internal or external to the Eagle System, to detect failures to the control devices, indicators, and alarm systems associated with the Eagle System. In the event of such failures, how is ATC informed?*

The Eagle System communicates with the lighting system in 3 key ways:

1. **Alarm notification.** The lighting system installed at the tower site is equipped with Eagle System software which contacts the ARC for every type of alarm. These alarms are captured and archived within the Eagle System database which has an automated escalation protocol within the ARC to ensure that proper diagnostics are conducted within a 30 minute window. Within this time frame, the ARC contacts the site from which the alarm originated and performs full system diagnostics to identify

the nature of the lighting failure and to determine if a NOTAM should be issued. If the issuance of a NOTAM is required, the proper FAA Flight Service Station ("FSS") is notified. The Eagle System requires a NOTAM number to be entered before the technician can complete his/her task. This number is provided by the relevant FSS verbally. All calls made to the FSS are recorded for accuracy and training purposes.

2. **24 – hour Polling.** The Eagle System is programmed to proactively contact each monitored site once every 24 hours. This call is automated and runs a complete system diagnosis of the lighting system. This diagnosis is completed for all lighting phases (i.e. night, day, twilight) regardless of the time of day the test call is conducted. This process ensures the lighting system is both working and communicating properly with the Eagle System. If any alarms or discrepancies are identified, the Eagle System immediately generates an alarm, triggering the ARC personnel to perform further in-depth analysis. The Eagle System is programmed to attempt to contact the site up to 11 times if the initial attempt fails. If, by the 11th attempt, contact is not made, the Eagle System generates an alarm and an ARC technician attempts to contact the site manually. The ARC technician attempts to contact the site a minimum of three times. If the ARC technician is unable to connect to the tower a "maintenance urgent" trouble ticket is opened and a NOTAM is issued if applicable and the trouble ticket and NOTAM are emailed to the appropriate ATC site manager.[1] As well, the appropriate ATC site manager is notified by telephone of the no communication situation.

   During its polling cycle, the Eagle System will complete a full diagnostic review of all lighting modes and confirm proper working condition of the lighting system. The Eagle System documents this data in an electronic database and all information is maintained for 5 years. If the automated diagnostic review is not fully completed due to a phone line disconnect, an alarm is immediately generated and an ARC technician manually contacts the site.

3. **Manual Contact.** The Eagle System allows for technicians to perform a manual diagnostic review of any tower monitored by the system from any computer. This function allows the ARC, ATC Operations, and ATC compliance staff to contact any tower and review operational status of its lighting system.

Inquiry 6: *In case of catastrophic failure at the NOC (i.e., the NOC is rendered inoperable), how does ATC detect outages at Eagle System equipped towers? Does ATC have a specific procedure to follow in case of this event? If so, what is it?*

[1] This detailed account supersedes the description given in the original waiver request made by ATC, which indicated that a NOTAM was issued after ten failed attempts to contact the site.

The Eagle System's ARC's primary facility is located in Franklin, Tennessee. A secondary, back-up facility is located in Horsham, Pennsylvania. The primary site is continuously staffed by Flash and the back-up site is continuously staffed by SPX. All ARC functions can be switched from the primary facility in Franklin, TN to the back-up facility in Horsham, PA within thirty minutes. In the event of a catastrophic event at the primary facility, either the ARC management or IT department in the primary facility would notify the back-up site.

Because the primary site is in constant electronic contact with the back-up site, technicians at the back-up site would detect a break in this continuous contact in the event that the primary site suffers a catastrophic event and its staff is incapacitated. Upon detecting such a loss of contact, the technicians at the back-up site would attempt to contact the staff at the primary site. If they were unable to establish this contact, the staff in the back-up site would be able to switch the ARC's functions to the back-up site.

Both the primary and back-up facilities are equipped with emergency generators that can provide power to all necessary monitoring systems for an indefinite period.

In the event that both the primary and secondary facilities suffer catastrophic failure, the laptop computer of every ATC Operations Manager and Site Supervisor is equipped with the Eagle Communications Software. As a result, each of these individuals could also manually initiate the 24-hour polling procedure by which contact is established with each tower monitored by the Eagle System so that a diagnostic review can be performed.

Both the Remedy and Eagle System primary servers replicate data to the corresponding secondary servers after each transaction. As a result, the back-up servers in Pennsylvania contain a mirror image of the data at the primary site. The data in the back-up servers would be used to restore the primary servers in the event they suffer a major failure.

A back-up log of all transactions is made every two hours as well. This provides the ability to restore a database to a particular point in time within a two-hour window.

In addition, ATC has enclosed a copy of Flash's Data Backup and Business Continuity Plan which provides additional information regarding the various safeguards and procedures that are in place to respond to problems at the ARC.

Inquiry 7: *Provide a brief description and an end-to-end block diagram of the Eagle system and all of the major supporting ancillary sub-systems (e.g., internet connections, telephone lines, etc.) associated with it. Please explain to what extent ATC has control over these sub-systems.*

Please see Section 10, Appendices A – C, of the enclosed Flash Data Backup and Business Continuity Plan.

For the foregoing reasons, and those contained in the original waiver request, American Tower Corporation respectfully requests that the Commission grant the requested limited waiver of its rules.

Should you have any further questions regarding the operation of the Eagle System, the supplemental inquiries or the waiver request, please contact the undersigned.

Respectfully submitted,

AMERICAN TOWER CORPORATION

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Dielectric
Alarm
Response
Center

Data Backup And Business Continuity Plan

Note: This document has been altered to redact administrative passwords and other information not intended for general distribution. ATC recognizes that this internal Flash document contains terminology (e.g., acronyms), the meaning of which may not be apparent. Should the Commission wish any clarification of this terminology, ATC will provide it.

Updated : 10/24/2005

Contents

1. Business Impact Assessment

Threat	Consequences	Preventive Measures	Recovery Window
Fire/explosion/flooding	• Water, smoke damage • Facilities destroyed • Processing interrupted • Assets lost • Loss of voice/data communications	• FM200 (gaseous fire prevention) system in computer room • Redundant Servers maintained at GIS (SPX datacenter in Horsham, PA)	• Dependant on extent of damage. • Servers / lines can be failed over to GIS within 30 minutes
Loss of Internal or External Electrical Power; brownouts	• Processing failures • Equipment damage • ARC downtime	• UPS to all ARC PCs and servers (UPS only serve to provide a short period of battery power until the power returns or the generator is activated). • Natural gas-powered (connected to city gas line) generator provides power to computer room and ARC.	• UPS immediately utilized • Generator starts up after 1 minute of power outage.
Loss of external communications lines	• Loss of ability of ARC to receive calls from customers • Loss of ability of Eagle to poll sites	• ARC Calls can be rerouted to GIS • Redundant Servers maintained at GIS • Escalation procedures in place with BellSouth	• Servers / lines can be failed over to GIS within 30 minutes
Failure of Internal PBX	• Loss of ability of ARC personnel to make or receive calls • Loss of ability of Eagle to poll sites	• Local phone support company under contract to provide Emergency support 24x7x365 with response times between 30 Minutes and 1 Hour. • 50% of ARC PCs use direct POTS lines instead of PBX which would be unaffected	• Servers / lines can be failed over to GIS within 30 minutes
Data loss or corruption of database	• ARC downtime • Inaccurate data	• Backups are run every 2 hours and tested on a regular basis • Data is synchronized with GIS servers	• Data can be restored or service can be transferred to GIS within 30 minutes

Server failure, hard drive failure, virus attack	• ARC downtime	• Redundant Servers maintained at GIS • Maintenance contracts are maintained on all hardware • Virus scanning software installed • Monthly maintenance performed on all servers	• Servers can be failed over to GIS within 30 minutes
PC Failure	• ARC employee cannot access Remedy	• Move to open PC (if available) • Replace PC with spare	• Employee up and running on available PC within 10 minutes • Replacement PC available within 24 hours
Modem failure on server	• Reduced call volumes	• Currently using only 14 of 24 available modems	• Modem can be recovered if necessary within 10 minutes.

2. Emergency Contacts

Name	Function	Office	Cell	Home
Mark Joss	GM, Flash	[redacted]	[redacted]	[redacted]
Brian Beck	Hardware Support	[redacted]	[redacted]	[redacted]
Jim Brown	ARC Systems	[redacted]	[redacted]	[redacted]
Chris Shumate	EAGLE Support	[redacted]	[redacted]	[redacted]
Mark Lane	SQL Support	[redacted]	[redacted]	[redacted]
Susan Simmonds	VP of IT (Dielectric)	[redacted]	[redacted]	[redacted]
GIS Helpdesk	GIS Datacenter Support (SPX)	[redacted]	[redacted]	[redacted]
BellSouth Local	Vendor – Phone	[redacted]	[redacted]	[redacted]
BellSouth LD	Vendor – Phone	[redacted]	[redacted]	[redacted]
Southeastern Telecom	Vendor – PBX	[redacted]	[redacted]	[redacted]
Dell Server Support	Vendor – Server	[redacted]	[redacted]	[redacted]
HP Server Support	Vendor – Server	[redacted]	[redacted]	[redacted]
IBM Support	Vendor – Server	[redacted]	[redacted]	[redacted]

3. Infrastructure Definition

A. Server Hardware

Name	Type	Comments	Software
FRAREM01	Dell Poweredge 2850	RAID 0 Boot (2 x 36GB) RAID 5 Data (3 x 72GB)	SQL & Remedy
FRAEAG01	Dell Poweredge 2850	RAID 0 Boot (2 x 36GB) RAID 5 Data (3 x 72GB) 4 x 6 port Rocketport Modem	Eagle Software & SQL
HOREAG01 (Eagle Server)	HP DL380	RAID 0 Boot (2 x 36GB) RAID 5 Data (3 x 72GB) 4 x 6 port Rocketport Modem	Eagle Software & SQL
HORREM01 (Remedy Server)	IBM	RAID 0 Boot (2 x 36GB) RAID 5 Data (3 x 72GB) + 1 Hot-swap Spare	SQL & Remedy

B. Server Addressing

DNS entries for the Eagle and Remedy Servers are as follows:

IP	Server	DNS	Computer name
[redacted]	Primary Remedy	[redacted]	FRAREM01
[redacted]	Primary Eagle	[redacted]	FRAEAG01
[redacted]	Secondary Remedy	[redacted]	HORREM01
[redacted]	Secondary Eagle	[redacted]	HOREAG01

In the event of failure of the primary servers, the DNS can be redirected to the backup servers by GIS (rather than re-addressing all of the clients).

C. Server Software

a. **Windows Server 2003 SP1 (Eagle and Remedy)**
b. **SQL Server – version 2000 SP4 (Eagle and Remedy)**
c. **Symantec Corporate Antivirus v 10 (Eagle and Remedy)**
d. **Remedy Version 6.1 (Remedy Only)**
e. **Eagle Eye (Eagle Only)**

4. Telephony

A. Voice

Voice telephone service is provided to the ARC through redundant PRI circuits with incoming calls going to several call groups.

PRI	Primary	Secondary
Provider	Bell South	Bell South
Circuit ID	[redacted]	[redacted]
Contact	[redacted]	[redacted]

Local Provider – Bell South - Customer Service Number (7/24): 800-247-2020
Long Distance Service – Bell South - Customer Service Number (7/24): 800-895-2222

B. Internal PBX

All calls are recorded using Voiceprint
Type of PBX: NEC 2000
Support Contract: Southeastern Telecom, Acct # [redacted]
Phone Number: 615-874-6300

C. Data

Dialup connectivity to towers for the ARC workstations is provided by a mix of POTS lines and analog cards on the above systems.

Dialup connectivity for the servers is divided into two sections, incoming and outgoing.

D. Server Communications

Incoming: 3 incoming lines are organized into a rollover group at each server. 1-800-[redacted] is pointed to the active server's rollover group for reception of tower alarms. **In the event of failure of the Primary Eagle Server 1-800[redacted] should be pointed to the secondary rollover group number. <u>This must be accomplished in less than 30 minutes after failure per FCC/FAA guidelines.</u>**

Contact Information for 1-800-[redacted]:

Incoming Eagle Phone #	**Primary**	**Secondary**
Rollover group number	[redacted]	[redacted]
Telephone Company	**BellSouth**	**Sprint**
Account #	[redacted]	[redacted]
Contact #	[redacted]	[redacted]

Outgoing: There are 11 outgoing lines on the primary Eagle server and 5 outgoing lines on the secondary Eagle server. In the event of failure of all lines on the primary server the ARC team can switch to the backup using **Eagle Eye Monitor.** The Eagle Eye Service will automatically disable Modems/Lines that have failed, so it is only to fail-over if most or all lines have failed.

5. Replication and Backup

1) The primary SQL-servers (Remedy and Eagle) will replicate to the secondary servers after every transaction.
2) A full backup to tape of the primary Remedy and Eagle servers will be made once per week and an incremental backup made daily. Transaction log backups occur every 2 hours but are not backed up to tape until that evening.

6. Email

Remedy requires an SMTP-relay service that is currently provided by an SMTP server at GIS. Although the 30 minute rule does not apply to Email notifications an Email outage is very visible to our customers and should be avoided.

7. Administration

1) Hardware Maintenance
    a. Hardware Support person will be responsible for the TN (primary servers)
    b. GIS will be responsible for the PA (secondary servers)
2) Operating System/Network maintenance
    a. Maintenance schedule, including security patches, will be executed as defined by Flash Technology IT. This will generally be done on Saturdays between 12:00pm and 4:00pm unless it is an emergency.
    b. Hardware Support person will be responsible for O.S. issues
    c. Hardware Support person will be responsible for network issues
3) Semi-annual testing will be coordinated by a team led by
    a. ARC Systems in TN
    b. GIS in PA

8. Power Failure

In the event of a power failure both the Primary site (Franklin, TN) and the backup site (GIS, Horsham, PA) have generators to provide power to all systems for an indefinite period.

9. Test Plan

A. Periodic Fail-over Drill Procedure

A fail-over drill should be done periodically; this should be scheduled at various times of day/week, avoiding peak periods. This should not be done during an active poll-out.

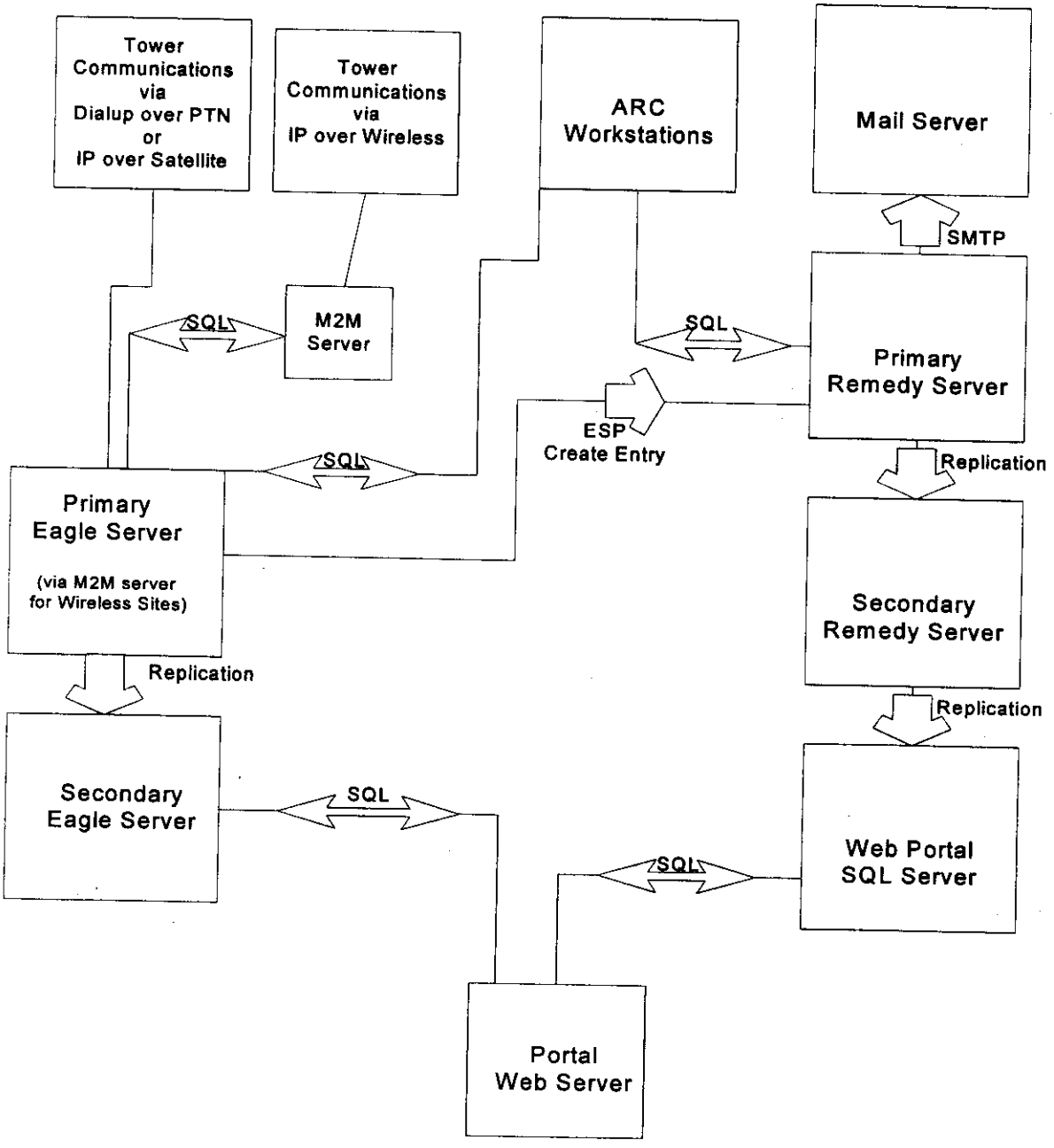
1) ARC Staff logs out of Remedy & Eagle **(30 minute clock starts)**
2) Wait 10 minutes to allow replication to complete (in an actual system failure we will have minor data loss, however we will prevent it for the drill)
3) Services are stopped; Eagle Eye & Remedy Action Request System server (all servers)
4) The following actions can be performed concurrently
    a. DNS is pointed to Secondary servers
    b. Remedy Email
        i. Run 'Deleter' to clear mail queue on Secondary Remedy server
        ii. Remedy Mail server, service is stopped on Primary Remedy server and started on the Secondary server
    c. Incoming alarm phone number (1-800-[redacted]) is pointed to backup server
5) Services are started; Eagle Eye & Remedy Action Request System server on the Secondary servers
6) Confirm alarm reception on secondary Eagle server
7) Primary Servers can be shut down (and maintenance performed)
8) ARC Staff logs into Remedy & Eagle (now on secondary servers)
9) ARC business resumes (30 minute clock stops)

B. Recovery Procedure

After the test the Primary Databases will be out of sync with the current data (now on the Secondary Servers) therefore the recovery is inherently more time consuming than the fail-over.

1) ARC staff must log out of Remedy and Eagle **(30 minute clock starts)**
2) Services are stopped; Eagle Eye & Remedy Action Request System server
3) Concurrent actions to be performed
    a. Data must be replicated from the Secondary servers to the Primary servers
    b. DNS is pointed to Primary servers
    c. Remedy Email
        i. Run 'Deleter' to clear mail queue on Primary Remedy server
        ii. Remedy Mail server, service is stopped on Secondary Remedy server and started on the Primary server
    d. Incoming alarm number (1-800-[redacted]) is pointed to primary Eagle server
4) Services are started; Eagle Eye & Remedy Action Request System server on primary server
5) ARC Staff logs into Remedy & Eagle (back on primary servers)
6) ARC returns to normal operation (30 minute clock stops)

10. Appendix A – Dataflow Chart
Normal ARC Systems Dataflow

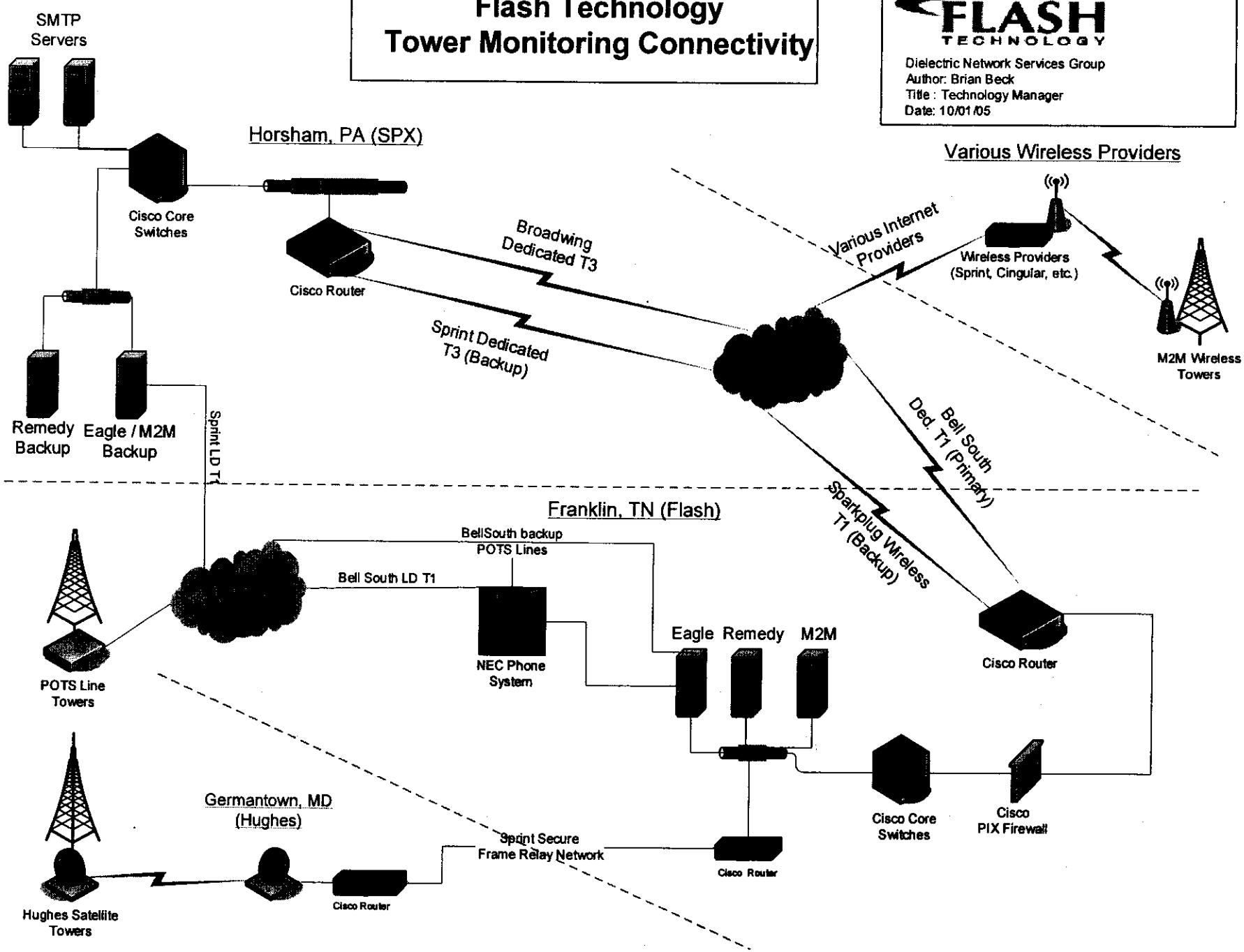


SQL – Communications between equipment occurs via SQL ODBC Link
ESP Create Entry – API routine developed at Flash Technology to create an entry in the Remedy system when the Eagle server receives a call from a tower.
Replication – SQL Transaction Replication occurs between equipment to maintain multiple copies of data

Flash Technology
Tower Monitoring Connectivity

FLASH TECHNOLOGY

Dielectric Network Services Group
Author: Brian Beck
Title : Technology Manager
Date: 10/01/05



Tower Monitoring Map.vsd

Appendix C – Equipment Definitions

Eagle – Eagle is a proprietary system developed at Flash Technology for the purpose of monitoring Tower Lighting and related systems. It consists of 3 parts:

- **EagleEye Service** - Server based application that allows incoming/outgoing calls from/to existing towers containing a Flash RTU (Remote Telemetry Unit). Data is dumped from this service into the Eagle DB.
- **Eagle DB** – SQL database that stores the basic information about each tower, such as configuration, phone number, hardware, status, etc.
- **SQL Eagle** – PC based application that allows ARC Employees to dial directly into towers via a modem at their desktop

Eagle Server – Server that runs EagleEye Service and holds Eagle DB. Primary Server is located in Franklin, TN, with a backup server located in Horsham, PA. Each server holds four 6-port Comtrol Rocketmodem II modems (24 lines total) for dialing into or receiving calls from the towers via POTS lines. The system also has redundant network cards connected to the Flash Technology network infrastructure for connectivity to the Backup Eagle Server, Remedy Server, M2M Server, ARC PCs, and Hughes Sites. Connectivity to towers occurs as follows:

- **Towers w/ POTS line** – incoming/outgoing connectivity occurs via internal modems connected to the Flash Technology, TN PBX system. The PBX has a dedicated T1 with backup POTS lines.
- **Towers w/ Hughes Satellite** – incoming/outgoing connectivity occurs via Satellite between the tower and Hughes, and by Frame Relay circuit between Hughes and Flash Technology.
- **Towers w/ Cox IP** - incoming/outgoing connectivity occurs via Internet connections
- **Towers w/ Wireless** - incoming/outgoing connectivity occurs via Internet connections to M2M server, then via LAN to Eagle Server.

M2M Server – Server that runs multiple services to monitor incoming connections from Wireless-connected towers. Server then dumps data directly into Eagle via SQL ODBC link.

Remedy – Off the shelf application (Remedy AR System), that has been customized to be used as a trouble-ticketing system for tower monitoring. Application consists of a 4 parts

- **Remedy Server Application** – Server based application that control the flow of data in Remedy
- **Remedy DB** – SQL database that stores all tower and ticketing information.
- **Remedy Mail Engine** – SMTP Email engine used by Remedy for notification
- **Remedy User Application** – PC application used to open/close/update tickets.

Remedy Server – Server that runs Remedy Server Application, Remedy Mail Engine and holds Remedy DB. Primary Server is located in Franklin, TN, with a backup server located in Horsham, PA. The system also has redundant network cards connected to the Flash Technology network infrastructure for connectivity to the Backup Remedy Server, Eagle Server, ARC PCs, and Flash Portal Application.